

Chapter 5

DRAINAGE SYSTEM CLEANING / REPAIR

CLEANING - Drainage system flushing is not to be contracted out at this time due to environmental concerns by the DEQ.

REPAIR - The purpose of this work activity is to ensure that all aspects of drain systems on a bridge are operational and performing as designed or as modified.

Inspect each drain casting, supporting deck structure, downspout, and collection box (if applicable) from both the surface and the underside. If the deck structure around the casting is delaminated on the surface or on the underside, estimate the area of hand chipping and patching required to provide better support for the drain casting and the downspout (see also Chapter 9 of this manual). Determine the need for deck drain extensions, downspout replacement, and end header box systems.

For CSM projects involving drain casting replacement, or any complex drainage system repair, it is highly recommended that a bridge design unit in Lansing be contacted for assistance. The design engineer will determine the proper number, size, and layout of epoxy coated steel reinforcement and adhesive anchored horizontal bars. Replacement of the drain casting systems are estimated by calculating the following quantities:

1. Number of castings to be removed, to be paid for as Structures, Remove Portions, Rehabilitation. A note should be placed on the plans that sawcutting and removal of concrete adjacent to the drain casting (limits to be called out in the plan details) are included in the pay item Structures, Remove Portions, Rehabilitation. This item will be bid lump sum but estimated as "each".
2. Amount of deep chipping necessary for removal of delaminated concrete beyond that necessary for drain casting removal, to be paid for as Hand Chipping, Deep.
3. Number of new castings required, to be paid for as Drain Casting, Type ____ or Drain Casting Assembly, Type _____. The cost of furnishing and installing the downspout and lower bracket (if necessary) is included in the pay item Drain Casting Assembly, Type ____.
4. Amount of concrete and steel reinforcement necessary to form around the new casting, to be paid for as Patching Concrete, LM; Patch Forming; Reinforcement, Steel,

Epoxy Coated; and Adhesive Anchoring of Horizontal Bars, ____ inch.

See English Special Detail B-101-C “Drain Casting Assembly Details”, and Sections 712 and 717 of the MDOT Standard Specifications for Construction.

Descriptions for pay items associated with this type of work can be found in the Standard Specifications for Construction. Some of those items are listed below:

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| • Structures, Remove Portions, Rehabilitation | [Lump Sum] |
| • Drain Casting, Type 1 | [Each] |
| • Drain Casting, Type 2 | [Each] |
| • Drain Casting Assembly, Type 1 | [Each] |
| • Drain Casting Assembly, Type 2 | [Each] |
| • Deck Drain Extension | [Each] |
| • Downspout Replacement | [Each] |
| • Hand Chipping, Deep | [Square Yard] |
| • Patch, Forming | [Square Feet] |
| • Reinforcement, Steel, Epoxy Coated | [Pounds] |
| • Adhesive Anchoring of Horizontal Bar, ____ inch | [Each] |

The following pay item can be found in the Special Provision for Structure Repair with Latex Modified Concrete in Chapter 9 of this manual.

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| • Patching Concrete, LM | [Cubic Yard] |
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See also the following Special Provisions, to be used as appropriate:

A. PVC DOWNSPOUT

Date Approved: 12-18-01

Usage Statement: The Spec book and Standard Plan B-101-B is set up for downspout replacement with polyethylene pipe. To call for a PVC downspout, use the attached special provision and the miscellaneous pay item code for PVC Downspout instead of the standard pay item for Downspout Replacement.

Pay Item:	<u>PVC Downspout</u>	[Each]
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B. PE END HEADER BOX SYSTEM

Date Approved: 06-06-02

Usage Statement: The bridge drainage system may include a drainage trough or

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end header box system to collect runoff from the deck drain or scupper and connect it to a funnel linked to an outlet pipe or downspout. Use the following special provision if this end header box system is in need of replacement.

Pay Item: PE End Header Box System [Each]